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ABSTRACT

A complete course outline is offered to educators and others who would prepare an intensive seminar on the sharpening of teaching skills for college and university professors. The practical methods and principles used are derived in part from careful investigation, by logic, and most frequently by experience. Five units are outlined: preparing instructional objectives: making schedules of instruction and evaluation: teaching: measuring and evaluating learning and teaching: and revisions for further simulation or actual course work. Teaching options available to every teacher include lecture, audio-visual techniques, reading and independent study, team formation and discussion, seminar teaching, programmed instruction and computer-assisted techniques, field study and practicum, simulation and role-playing, tutorials, clinical teaching groups, and special learning situations. Each unit and sub-unit contains didactic statements, tips, provocative quotations, references, and assignments to carry out. The teaching process is viewed as a cyclical reworking of preparation, instruction, and evaluation steps, which result in student learning. (DC)

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A Practical Approach to College and University Teaching: Outline for an Intensive Course

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Report #2

January, 1979

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PREFACE

The Standing Committee on Teaching (SCOT) of the Faculty of Education at The University of British Columbia has as its goal the promotion of quality teaching and teaching improvement within the Faculty. Consistent with this goal, we invite leading teachers and educational research and development specialists to visit our faculty from time to time to share their expertise and exchange ideas about teaching and teaching improvement. SCOT has organized a Centre for the Improvement of Teaching (CITE) to carry out consultation, research and development, and dissemination activities.

We were fortunate that Professor Hartmut Matzat of the University of Kassel was able to visit our campus during the first term (September to December) of the 1977 academic year, and again from July to September, 1978. This paper, a result of his work here, is a detailed outline for an intensive course in college and university teaching. It represents an integration and synthesis of related work undertaken in Germany and Canada.

In addition to preparing this paper, Professor Matzat's activities here included: seminars and workshops on college and university teaching on and off the U.B.C. campus; classroom visitations and teaching consultations in the faculties of Education, Dentistry, and Science; and serving as a resource person-consultant to the U.B.C. Centre for Continuing Education on staff development programmes. He provided invaluable help to the staff of SCOT during the developmental phase of its first year of operation when the groundwork was laid for CITE.

Professor Matzat has a background in English teaching and is head of the Department of International Agriculture at the University of Kassel, Witzenhausen campus, West Germany. This department offers an extensive program of post secondary teacher training for specialists in agriculture in tropical countries.

The main purpose of this paper is to provide guidance to educators or others who would prepare and offer an intensive course for the preparation of college and university teachers. The course is most likely to be offered in-service--that is, for participants who have some teaching

experience. It is suited for pre-service training as well. Although the course outline emphasizes didactic teaching, a variety of alternatives to the lecture method are included. Evaluation of learning and teaching are included as well as key references for each section. Advanced courses can be developed by expanding and intensifying the work in any section. A more comprehensive reading list and bibliography is under preparation to be released as CITE Report #3 in this series.

Recipients of this document having questions or comments concerning its contents are encouraged to communicate directly with Professor Matzat at the University of Kassel, Steinstrasse 19, D3430 Witzenhausen, F.R. Germany, or with Dr. Stephen F. Foster, Coordinator, Centre for the Improvement of Teaching (CITE), Faculty of Education, The University of British Columbia, Vancouver, B.C., V6T 1W5, Canada. If you wish to receive additional copies of this paper or other papers in this series, send your requests to the Centre for the Improvement of Teaching. A nominal charge of one dollar Canadian (payable in advance) is made to defray postage and handling expenses.

Stephen F. Foster and J. Gordon Nelson, Convenors
The Standing Committee on Teaching
Centre for the Improvement of Teaching

Vancouver, B.C.
September, 1978

Unit 0.0. INTRODUCTION

The purpose of this course is to help you to acquire and develop teaching skills. The methods and principles used are derived in part from careful investigation, equally often by logic, and most frequently from experience. What you do here is intended to be practical. Skills can be developed more by practicing than by reading. There is probably less written information here than usual because you will practice and develop the skills by doing them.

If you are unfamiliar with words like "instructional objectives," "cognitive," "affective," "operationalizing," do not despair. Many others are too. It is difficult to communicate between specialties. Consider the reactions of a teacher having degrees in education when confronted with technical terms like mariculture, ph balance, MDF-index, release of histamine, or linear B decoding.

Although you may never have to analyze TMJ-function or decode linear B, you will very likely have to teach without having had, or having the time for, a four year course on educational theory and research, principles of learning, human behavior, educational tests and measurements, or teaching methods.

Nevertheless, use of some new terms is unavoidable. Thus a few words like "instructional objectives," with which you might not be familar in the beginning, will turn out to be quite handy in communicating about the subject matter of this course.

Teaching, when successful, results in student learning. Teaching can be described in terms of three kinds of activities: preparation, instruction, and evaluation. These three can be further sub-divided into stages of instruction (West and Foster, 1976). Usually one starts with preparation, then teaches (which means working according to the preparation), then evaluates what has been accomplished. After the evaluation it might be necessary to revise either the preparation or the teaching or even the evaluation. Then one starts again with preparation, carries on with teaching, and finally evaluation. Thus a teacher can be said to work in circles (or at least in cycles)! Taken as a whole, this paper describes an intensive first course in teaching. Each part could be expanded into a second course and more advanced work on several of the sections is possible.

For this course it might be advisable to develop all sections of the teaching cycle once, twice, or even three times. Then one would be ready to undertake more advanced study or to re-work a particular section (e.g., evaluation).

The following pages are divided into units and subunits that follow the teaching sequence from planning through evaluation. There are "statements," tips, provocative quotations, references and most important, assignments to carry out. Each unit concludes with questions for use in evaluating what was accomplished therein.

Some teaching improvement courses seem to be unsatisfactory for the following reasons:

They contain (especially in the beginning phases) too many details of one particular method, for instance, the "lecture";
They focus on research findings or other topics which do not seem directly relevant to teaching skills;
They superimpose a "shortened full time course" of educational science on top of an already completed course of, let us say, dentistry, agriculture, or biology;
They sometimes give too much information to the participants, who remain too passive to be much changed by it. (Cantrell & Abramsky, 1977)

If teaching can be considered in part to be a collection of skills, then it might be learned and improved by practice, not merely by reading a book or listening to a teacher. Readings may help one to learn a skill to some extent, but alone they will not suffice.

This course will stress learning by doing. Your active participation is necessary, because you will not achieve very much merely by reading this paper.

After working through this course, you will have completed the three phases, preparation (1-4), teaching (5), and evaluation (6), which include the following sections:

1. Stating instructional objectives as learning outcomes
2. Describing conditions of instruction.
3. Revising 1. or 2. if necessary to be more specific.
4. Making a schedule of teaching.
5. Proceeding according to that schedule.
6. Evaluating.

Having gone through the teaching process this way, one comes to the end of the first cycle. This can be repeated, because evaluation may show that revision and improvement of the first cycle is necessary. This revision should be worked through, either in the same course or on the job or in a follow-up course. Not before then should you start with the second cycle, in which you focus on one or more particular sections.

Teaching should help people (subsequently called "students") to come to know and do things which they want to do, or
which the teacher thinks they should want to do, or
which the teacher thinks he should cause them to want to do, and
which the teacher knows how to do.

"Knowing" and "doing" are auxiliary terms in the terminology of this course. They indicate "behaving" in a specific manner, thus teaching should help students learn to behave differently than they did before the teaching process had taken place. The outcomes of successful teaching can therefore be stated in terms of changes in student behavior.

Learning is what happens on the student's side while on the teacher's side, the teaching is going on. Learning outcome is a behavior acquired by the student during, and shown at the end of, teaching/learning processes, and thus can be called terminal behavior. This is different from a behavior at the beginning of teaching/learning processes (entering behavior), but for clarity both should be stated in performance (behavioral) terms. As each learning outcome can be transformed into one or more test items, it should be stated in measurable behaviors. This provides the link between learning outcomes and evaluation.

An example of entering behavior stated in performance terms might be: "Student identifies correctly five parts of speech in sample Spanish sentences." A learning outcome stated as terminal behavior might be: "Using a dictionary, student translates in writing in two hours with 80% accuracy a 500 word passage of technical Spanish."

These are measurable or at least observable behaviors which can be subsumed under the general objectives, Knows Spanish grammar, and Understands technical Spanish writing. Virtually any course of study can be described in terms of general objectives using terms like knows, comprehends, understands, applies, analyses, synthesizes, evaluates.

For each of these outcome categories, samples of specific, observable outcomes can be stated (e.g., identifies, selects, compares, assembles, rank orders). Stating these outcome samples clarifies what the course is to accomplish, providing guidelines as to how to proceed and what to look for in evaluating student achievement. (For details see Unit 2.5. Evaluation.)

The next page is an outline (Table 1) of the General Instructional Objectives (GIOs) (1.0., 2.0., 3.0., 4.0., 5.0.) and Specific Learning Outcomes (SLOs) for this course. This is diagrammed on the following page (Fig.1.). Your first task is to state GIOs and SLOs for a course you will teach. When you have done this you will be in a position to continue directly through the cycle of planning, teaching, and evaluating, each step of which might cause you to revise or restate the Objectives. (We revised the parts of this paper several times in light of developing subsequent sections, and in offering short courses based upon these ideas.) After the basic cycle of teaching has been carried out, it is possible to undertake advanced study (specialize) to develop knowledge and skills further at any stage. These possibilities are shown in Figure 1 as the arrows in the right margin pointing to revision or further specialization at each step.

0.0. (4)

Table 1:

General Instructional Objectives (GIOs) (1.0., 2.0., 3.0., 4.0., 5.0.) and Specific Learning Outcomes (SLOs) for this course

1.0. Prepares Instructional Objectives for a course (which one plans to teach).
- 1.1. States General Instructional Objectives (GIOs) for a university course in one's subject matter.
- 1.2. Describes conditions under which these are to occur (such as amount of time, number of students, rooms, available equipment, personality of student and teacher, students' entering behaviors).
- 1.3. Lists Specific Learning Outcomes (SLOs) on the basis of 1.1. and 1.2.

2.0. Makes schedules of instruction and evaluation (operationalizing 1.1. - 1.3.).
- 2.1. Selects material such as literature, exhibits, films, examples.
- 2.2. Divides material into sections of content and time.
- 2.3. Sets up a rough time schedule.
- 2.4. Develops methods of instruction (selects from the following those which are appropriate to the participants' specialties and intended teaching).
  - 2.4.1. Lecture
  - 2.4.2. Audio-visual techniques (AV media)
  - 2.4.3. Reading and independent study
  - 2.4.4. Team formation and discussion techniques
  - 2.4.5. Seminar teaching
  - 2.4.6. Programmed instruction and computer-assisted instruction (PI and CAI)
  - 2.4.7. Field study and practicum
  - 2.4.8. Simulation and role-playing
  - 2.4.9. Other teaching methods such as tutorial, clinical teaching, and special learning situations
- 2.5. Develops procedure to evaluate learning outcomes (writes items for exams).

3.0. Teaches (proceeds according to schedule 2.4.).
- 3.1. Teaches in a simulation with the participants of this course as students.
- 3.2. Teaches in a course of one's choice.

4.0. Measures and evaluates learning and teaching (follows schedule 2.5.).
- 4.1. Reviews general principles of educational measurement and evaluation.
- 4.2. Measures and evaluates student achievement (administers examinations, evaluates projects, etc.).
- 4.3. Reviews marking systems and summative evaluation.
- 4.4. Prepares and uses course evaluation.
- 4.5. Revises measurement and evaluation procedures for further use.

5.0. Revises 1.0. - 4.0. for further simulation or actual course work.

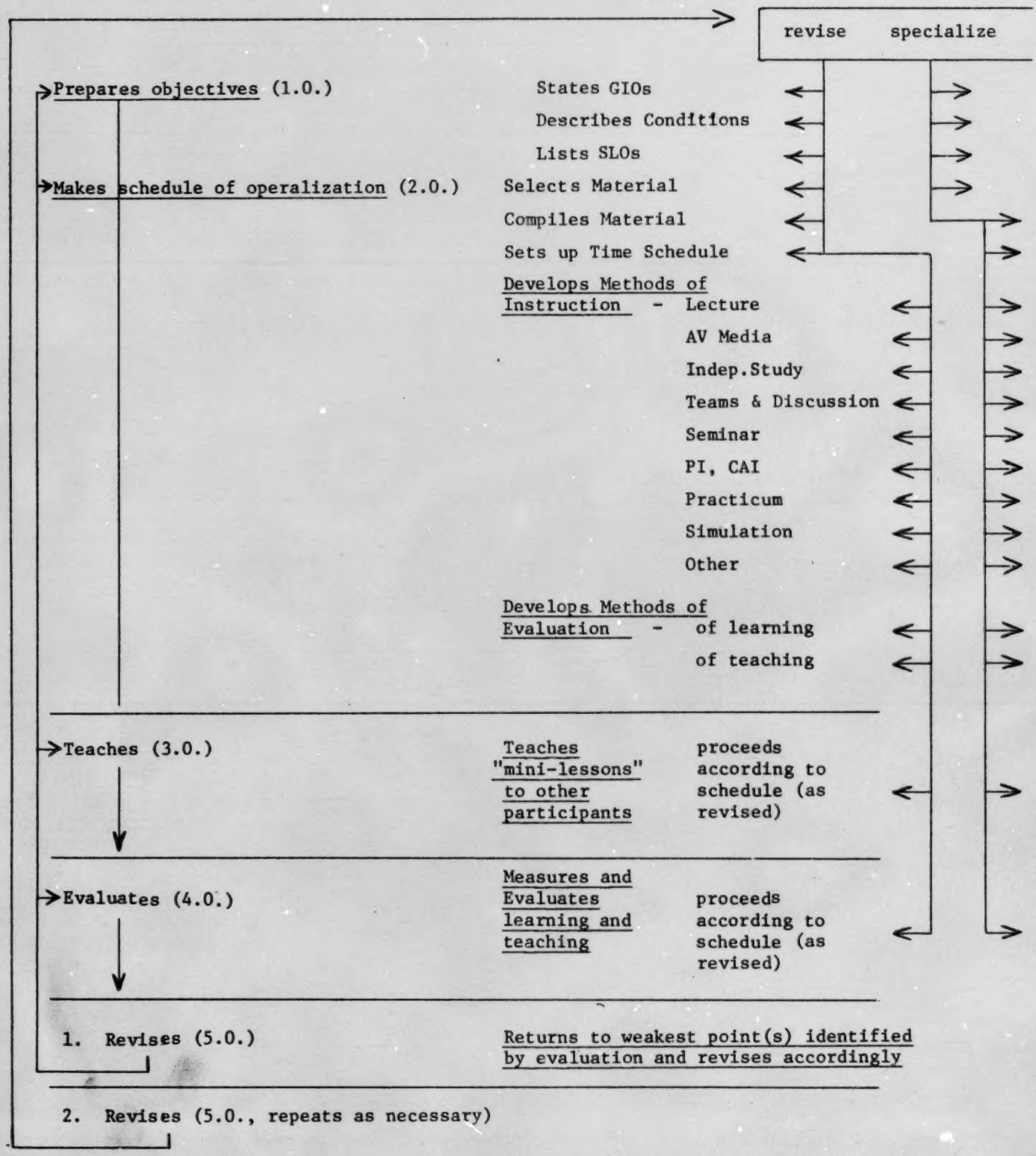


Figure 1. Diagram showing key phases in this course arranged in sequence to facilitate planning courses in general. Provisions for revision or further specialization at each step are shown by marginal arrows.

0.0. (6)

"Those who do not know where they want to go will never arrive!"

An instructional objective can be stated as the position which the teacher wants the learner to reach (P_O). Entering position (P_E) is the position of the learner at the beginning of the learning process. Learning involves the learner proceeding towards the objective. Terminal position (P_T) is the position of the learner at the end of the learning process. This P_T may be equal to or different from P_O. Any learning outcome can be taken as the difference between the entering position (P_E) and the terminal position (P_T) with regard to the position described in the instructional objective (P_O).

The learning outcome can be measured (how much, how many?) and evaluated (how well?). Tasks and assignments are aids given to the learner for proceeding towards the objective. The rationale for tasks should be educationally, ethically, socially, and economically sound.

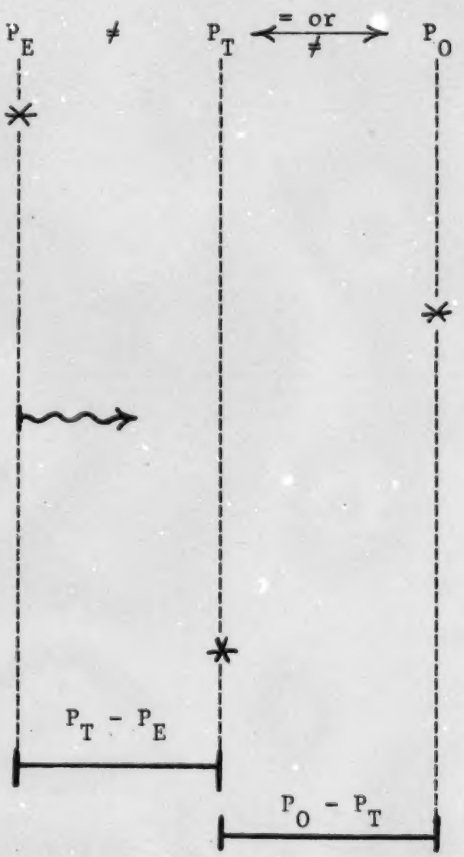
Entering Position (P_E)
"where the student is initially"

Position described in Instructional Objective (P_O)
"where the student is to be"

Learning:
"the direction the student is proceeding"
($P_E \rightarrow P_{E+1} \rightarrow P_{E+n}$)

Terminal Position (P_T)
"where the student is at end"

Learning Outcome Differences



Evaluation
1) Measuring the quantity of the difference $P_T - P_E$ (how much learning has taken place?).
2) Judging the quality of the difference $P_O - P_T$ (how well have objectives been met?).

Reference: West, C.K., & Foster, S.F. The Psychology of Human Learning and Instruction in Education. Belmont, CA.: Wadsworth, 1976.

10 Cantrell, T., & Abramsky, L. The design of short teacher-training courses. Medical Education, 1977, 11, 311-318.

Unit 1.0.

General Instructional Objective: Prepares General Instructional Objectives (GIOs)

Unit 1.1.

Specific Learning Outcome: States General Instructional Objectives as classes of student behaviors one would expect to result from a given course one might offer.

The GIOs of this course are listed for each unit (and sub-unit).

To state a GIO is to define in behavioral terms what each student should learn to do as a result of the course. The GIOs do not describe the teaching/learning processes themselves, nor what goes into them. Behavior can be stated with any verb such as think, feel, do. "Think" is an objective in the cognitive domain, "feel" in the emotional (affective) domain, "do" in the psychomotor domain.

GIOs should be stated for each instructional unit. An instructional unit can be a complete university course, one term, one week, one topic or lesson, or even one section of a lesson. You should be able to identify in student performance terms the kinds of learning outcomes a successful student should display.

When stating GIOs, start with general terms which describe categories of student behavior. An affective GIO in a clinical dentistry course might be: "Treats patient sympathetically." (GIO)
This is observable when the dentist
smiles at the patient, (SLO)
talks him out of his anxiety, (SLO)
gives reasons for what he is doing. (SLO)
Some cognitive GIOs would include:

1. Knows patient's history
2. Comprehends conditions of mouth
3. Understands course of disease
4. Applies appropriate procedures
5. Analyses possible outcomes
6. Synthesizes prognosis of treatment
7. Evaluates patient progress and plans next phase.

The three Specific Learning Outcomes (SLOs) state examples of student behavior which could be taken as evidence that the general objective has been met. When we state SLOs, conditions of learning (as described in Unit 1.2.) should be kept in mind.

University teaching should have these general types of objectives: student "does" things, deducts principles from this "doing", applies principles to doing new things. More specifically, this might read: knows, understands, applies, analyses, synthesizes, evaluates.

Teaching in general should show students what to do and how to do it. University teaching should enable students to understand why to do things. In part, university education teaches students how to learn. An overall GIO of university teaching in behavioral terms is: Student knows how to learn.

1.1. (2)

Why?

Every year the amount of printed paper conveying research results increases dramatically. Much of it, however, may be obsolete within another few years. What a student knows on the day of graduation may be valid for only ten years if he/she hasn't learned how to learn new things without the aid of teachers. Thus university teaching should set off life-long learning processes based on sound initial knowledge enhanced by experience and inspired by a motivation always to perform well.

It is your turn now:

1) Please read the relevant parts of Stating Objectives for Classroom for Classroom Instruction (2nd ed.), Gronlund (1978).

2) State GIOs for an instructional unit of a course of your choice.

3) Present the results to your colleagues.

4) Discuss the GIOs with your colleagues and revise them if necessary.

5) Check GIOs against checklist in Appendix A (Gronlund, 1978) or pp. 14-15 of this outline.

Unit 1.2.

Specific Learning Outcome: Describes conditions under which desired learning will be performed.

Classroom learning results from human interaction taking place in a setting during a certain amount of time. These humans are different types of students and teachers, so, in creating specific learning outcomes, we have to consider the environmental exterior and personal interior conditions. Surrounding learning conditions are important in that they can serve to aid or hinder learning.

Exterior conditions can be

A) time, space, and other people, such as rooms, time of year and day, amount of time available, climate, temperature, humidity, light, noise, necessary and available equipment, number of students, staff assistance, GIOs of other related courses.

Since learning occurs in the context of society, we have to consider the

B) socio-cultural conditions, which can be the cultural and political backgrounds of the educational system, of the students and the teacher, of the subject matter.

Interior conditions can be

A) characteristics of the student(s):

1) intellectual abilities, i.e., abstract thinking, knowledge, memory, etc., that can be relied on (entering behavior). In a sense, what a student does not know can be as important in selecting appropriate GIOs and SLOs as what he does know.

2) emotional abilities of the student that can be relied on, i.e., social behavior, type of character, attitudes and motivation related to subject matter, to teacher, to fellow students, to time of the day, of the term, of the year, of his life.

3) physical abilities, i.e., endurance, alertness, physical condition, communicative abilities like speaking and hearing.

B) characteristics of the teacher(s) (paralleling those of the student):

1) academic and professional preparation of teacher, knowledge of subject; ability to communicate.

2) emotional and ethical maturity; enthusiasm for subject matter.

3) physical abilities; can instructor demonstrate skills necessary?

Again, it is your turn.

1. A good starting activity might be the "Critical Incidents in Teaching" techniques (instructions following next page).
2. After that, please read the relevant pages in McKeachie and Gronlund.
3. State exterior and interior learning conditions for a course you might teach.

4. Discuss these with colleagues. Can they be improved?

5. Present the conditions you listed including a "personal profile" of:

   (a) yourself as a student,
   (b) yourself as a teacher,
   (c) one of your colleagues as a teacher,
   (d) the teacher of this course.

Now given the GIOs stated in Unit 1.1. and the conditions under which teaching and learning are likely to occur, you are ready to list specific learning outcomes (SLOs) for each GIO (Unit 1.3.).

1.2. (3)

Instructions for the Critical Incidents in Teaching Technique

This approach can be used to elicit from the participants' experiences factors crucial to good teaching. Numerous aspects of teaching or learning can be listed with the goal of comparing the collective wisdom of an experienced group with the information developed through theory and research in human learning and instruction.

Because it gives rise to learning, motivation is a good place to start.

Specific Learning Outcome: Induction of motivational principles in teaching through sorting critical incidents.

Rules:

1. Think of two teachers you actually have known. Take your time, and try to remember the one teacher who was able to hold your attention in an extraordinary way; caused you to want to work harder, longer, and to prepare better than at any other time; who inspired your work to the highest standards. Search your memory for details. What did the teacher actually DO to excite your interest?

   Write down specific things that the teacher did to motivate you. Do not idealize. This must be a real teacher you have known. Take your time, think carefully! Can you make a longer list? One item to a card. Use cards from envelope A.

2. Now think of the one teacher who was boring, was uninspiring, made it difficult to become interested in the course. What was it about this teacher that made the experience so boring? Write it down, one item to a card. Search your memory. Can you make a longer list based upon your real experiences with one teacher? Take your time, work carefully. What did the teacher actually DO to make you disinterested in the subject matter? Use cards from envelope B.

3. Two (or more) committees form to sort the cards into categories. What groupings of factors emerge? Present the results to the large group. Ask an individual who is familiar with motivation theory to comment on how the collective experiences of the group confirm/refute theory and research. What has been left out?

1.2. (4)

Some other problems that could be approached with this technique:

A teacher who used fair and informative evaluation techniques vs. one whose examination policy aroused suspicion, anxiety, and bad feelings.

A teacher who inspired respect and admiration vs. one whose behavior resulted in disrespect and students' not taking him/her seriously or as a credible instructor.

A teacher who caused you to learn conceptually, encouraging deep understanding, comprehension, and appreciation vs. one who caused you to memorize facts by rote.

A teacher who not only caused you to learn but to RETAIN for long periods what you learned vs. one who taught in such a way that the things, if learned at all, were quickly forgotten.

Suggest other topics for the Critical Incidents technique.

Unit 1.3.

Specific Learning Outcome: Lists Specific Learning Outcomes for each GIO of a course one might teach.

In this step, ask the questions: Can the GIOs and SLOs occur under these conditions? What might be hindrances? Where are pitfalls to be expected? Can I alter conditions? The most important question in selecting or listing SLOs is, What will I take as evidence that the general objectives have been attained?

For the GIO, knows Spanish grammar, some SLOs might be:

Given a brief passage written in Spanish, the student:
a) correctly labels parts of speech in five consecutive sentences (80% accuracy),
b) assigns articles to nouns correctly as to gender (9 of 10 correct),
c) identifies errors in a flawed passage,
d) supplies corrections for errors found in c).

1) Discuss whether SLOs and conditions match.

2) Present a report on the discussion giving reasons for having made alterations, if any.

3) Present specific SLOs you have selected or stated (as revised) and conditions to participants.

4) Ask your colleagues for suggestions and concurrence with the revised SLOs.

5) Assess SLOs using checklist in Appendix A (Gronlund, 1978) or list on pp. 14-15 of this outline.

1.3. (2)

Evaluation of Unit 1.1. States General Instructional Objectives
1.2. Describes Conditions
1.3. Lists Specific Learning Outcomes

1) Were GIOs stated for a course one might teach?

2) Does each general instructional objective indicate an appropriate outcome for the instructional unit? (Seek opinions of knowledgeable colleagues.)

3) Does the list of general instructional objectives appear comprehensive - to include all reasonable or logical outcomes of the unit (knowledge, understanding, skills, attitudes, etc.)?

4) Are the general instructional objectives attainable (do they take conditions into account, e.g., the ability of the students, facilities, time available, etc.)?

5. Are the general instructional objectives in harmony with the philosophy of the school?

6. Are the general instructional objectives in harmony with sound principles of learning (e.g., are the outcomes those that are most permanent and transferable)?

Statement of General Objectives:

7) Does each general instructional objective begin with a verb (e.g., knows, understands, appreciates, etc.)?

8) Is each general instructional objective stated in terms of student performance (rather than teacher performance)?

9) Is each instructional objective stated as a learning product (rather than in terms of the learning process)?

10) Is each general instructional objective stated in terms of the students' terminal behavior (rather than the subject matter to be covered)?

11) Does each general instructional objective include only one general learning outcome (rather than "knows and interprets...", etc.)?

12) Is each general instructional objective stated at the proper level of generality (i.e., is it clear, concise, and readily definable)?

13) Is each general instructional objective stated so that it is relatively independent (i.e., free from overlap with other objectives)?

Statement of Specific Learning Outcomes:

14) Is each general instructional objective defined by a list of specific learning outcomes that describes the terminal behavior students are expected to demonstrate?

15) Does each specific learning outcome begin with a verb that specifies definite, observable behavior (e.g., identifies, describes, lists, etc.)?

16) Is the behavior in each specific learning outcome relevant to the general instructional objective it describes?

17) Is there a sufficient number of specific learning outcomes to adequately describe the behavior of students who have achieved each of the general instructional objectives?

How well did the participant appear to:

18) Describe or at least check the conditions?

19) Consider external conditions?

20) Consider internal conditions?

21) Consider socio-cultural conditions?

Reference:

List adapted from Appendix A, "Check List for Evaluating the Final List of Objectives," pp. 67 and 68 of Gronlund, N.E. Stating Objectives for Classroom Instruction (2nd ed.). N.Y.: Macmillan Publishing Company, Inc., 1978.

McKeachie, W.J. Teaching Tips (7th ed.). Lexington, Mass.: D.C. Heath and Company, 1978.

Unit 2.0.

General Instructional Objective: Makes Schedules of Instruction and Evaluation

This unit is divided into five sections, numbered 2.1. - 2.5.

Unit 2.1.

Specific Learning Outcome: Selects materials that serve the general objectives,

e.g., literature such as books, textbooks, periodicals, research outcomes; films, AV media; CAI-media; research of one's own; experience of one's own, experience of others; consulting with colleagues (panel discussion, invite colleague as guest instructor).

Statement:

Working on 2.1., you will realize three things.

1. There is so much you know about the subject.
2. What you know is so important that students must know it, too.
3. Not enough time is available to teach all that you know.

Some teachers handle this problem by speaking faster, starting class a week before term begins, lecturing right into lunch break, expecting students to stay in class for another five minutes, or carrying over instruction into exam week. Covering ground becomes more important than quality of understanding.

Such "objectives" are not statements of SLOs, but describe teaching processes, regardless of whether learning takes place. Teachers sometimes feel compelled to "get rid" of their subject matter. In an "examination" they check how much the student can repeat of what they have said. Grading depends upon whether the candidate uses the teacher's words (excellent) or dares to choose his own words (pass). Such teaching is subject-matter oriented, egocentric, and calls for rote memorization. How can we avoid it?

Consider the goals of teaching and of university teaching. Remember that a general objective of university teaching was: "Student knows how to learn." So does one really have to learn all about a subject, however important the subject may seem to be?

2.1. (2)

"Your subject matter is well selected if it serves the intellectual or professional needs of students first, because it then will serve the objectives of the course automatically."
- Anon.

1. Discuss this statement in a small group, using your own experience and whatever arguments for and against you can devise. Does the statement need to be modified in some way?

2. Present the results to the large group.

Then go ahead and prepare your course:

1. State which material you would survey.

2. State what you are looking for that serves your specific learning outcomes as stated above.

3. Select material, present a description of it to the group, and give reasons why you selected it.

4. The group may question your selection. You are to defend it.

2.1. (3)

Evaluation of Unit 2.1. Selects Material that Serves the Objectives

1. Does the material selected serve the learning outcomes?

2. How well was it presented to the large group (in terms of teacher conviction, clarity, familiarity)?

3. Is the material justifiable, ethically, intellectually, economically?

4. Does it appear that alternatives were given suitable consideration or that a "line of least resistance" was followed?

5. Is the material clear and unambiguous, or do any ambiguities actually serve the learning outcomes?

6. Does the amount of work required of the students in using the material seem to be about right (too much, too little)?

2.2. (1)

Unit 2.2.

Specific Learning Outcome: Divides material into sections or topics.

Have your learning outcomes in mind (or in writing). You should prepare about 7 ± 2 GIOs, each of them consisting of another 7 ± 2 specific learning outcomes, not because 7 is a magic number, but because structuring processes of memory organize 7 ± 2 items optimally. Dividing material into sections or topics means to assign it to your GIOs or SLOs.

After having inspected and divided the material, you will have to compile it into units that serve your learning outcomes. Then proceeding to 2.3., these units can be fitted to a rough time schedule.

In Unit 2.4.1., you will be asked to give a lecture of 5 - 10 minutes length. (The learning outcome of that lecture: your "students" understand why you chose your particular material for your learning outcomes.)

It is your turn now to:

1. Refer to relevant parts of Gronlund (1978).

2. Use the SLOs you stated before and divide the material so that it serves the SLOs of your lecture.

3. Be prepared to present it in a lecture format (5 - 10 min.) to the group when asked to do so in Unit 2.4.1.

2.3. (1)

Unit 2.3.

Specific Learning Outcome: Sets up a rough time schedule.

You have already considered the amount of time for teaching when you stated the conditions (Unit 1.2.) In dividing the material into topics, some idea of relative emphasis and differing amounts of teaching time required may have occured to you. Now assign a certain percentage of time to each topic and transform these percentages into instructional periods of 50 minutes, called "hours."

Why?

Because teachers sometimes seem to forget that an instructional hour has only 50 minutes. Some teachers start lecturing at 9:00 a.m. and by 9:50 are deep in digression. They may begin the year in a very detailed manner and by mid-term break be still telling the students what they are going to tell them.

Here is an example showing how the time schedule for this course was set up:

TOPICS	APPROXIMATE PERCENTAGE OF TIME	CLASS HOURS
Instructional Objectives and Learning Outcomes	13.5	8[1)]
Planning, scheduling, and selecting material	6.5	4
Rhetoric, Public Speaking, Communication, Team Training	20	12
Other Methods of Instruction	40	24
Evaluation	20	12
	100	60

[1)] Basis: 4 weeks x 5 days x 3 hours = 60 hours

Now set up a time schedule for a course you might teach.

2.4.0. (1)

Unit 2.4. Develops Methods of Instruction (and Aids)

Specific Learning Outcome: Develops methods of instruction (including those of the following appropriate to the field of intended teaching).

2.4.1. Lecture.

2.4.2. Audio-visual techniques.

2.4.3. Reading and independent study.

2.4.4. Team formation and discussion groups.

2.4.5. Seminar.

2.4.6. Programmed instruction and computer-assisted instruction.

2.4.7. Field study and practicum.

2.4.8. Simulation and role-playing.

2.4.9. Other teaching methods such as tutorial, clinical teaching, and special learning situations.

2.4.0. (2)

Another Statement by Anon.:

It is interesting to speculate on the information intake of the human brain. For normal persons, the following proportions might apply:

78% by eye

13% by ear

3% by smell

3% by taste

3% by touch

Furthermore, in terms of memory, it has been speculated that

you remember	per cent	of what you
	10	Read
	20	Hear
	30	See
	50	Hear and See
	70	Say
	90	Do
	?	Teach

Consider the implications of these percentages, if true, for the different modes of instruction discussed in the pages that follow.

Unit 2.4.1. Lecture

General Instructional Objectives: Understands the Principles of Lecturing, Applies These Principles to Developing a Lecture

Specific Learning Outcomes: Prepares and delivers a lecture to the group.

Please take notes!

This is a lecture about the lecture method of instruction.

To give a lecture can be taken to mean to present information orally to a group. The items outlined in the statement regarding information intake and memory on page 2.4.0. (2) are suggestive here.

Start a lecture by stating the GIOs or some relevant SLOs of that lecture, or with an introduction:

appealing to the motivation of the students through their curiosity or expectation of satisfaction;

summarizing any preceding lecture or earlier information;

stating a problem to be solved by the information this lecture will provide.

Organize the "body" of your lecture observing Gagné's components of instruction.

Finish with a summary and a preview of things to come (future GIOs/activities) so that the students are keen to follow up the ideas and to return to the next class.

Strengths and weaknesses of the method:

Well prepared and presented lectures can be efficient means of communicating information to a large number of people. Lectures may also inspire later action, but typically are not strongly associated with attitude or behavior change.

Variations on the method:

Lecturette-discussion (some information given to be used for immediate discussion); "live" lectures may be recorded for later playback and evaluation (audio or video).

To make your lectures more effective, you should consider some aspects of communication.

Handouts (some tips):
A handout can enhance or inhibit learning. If it has GIOs, key definitions, key diagrams, spaces for note taking, pass it out before a lecture begins. If it has references for later study, assignments, or problems to solve out of class, pass it out toward the end of the period allowing time to clarify its use or answer questions.

2.4.1. (2)

Communication occurs when a sender transmits thoughts and ideas and emotions with the help of a code (sign, word, letter, electric impulse, music, painting) to a

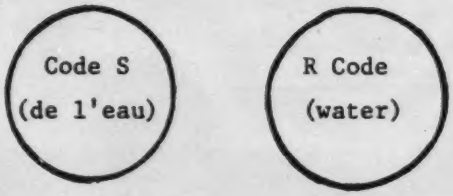
receiver with a capacity (understanding) for the code. Furthermore, feedback is necessary to make sure that messages have been received.

A receiver can become a sender making two way reciprocal communication possible.

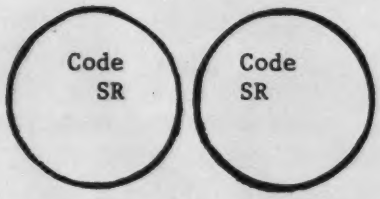
Means of communication can be printed words, music, pictures, sculptures, physical contact, or human voice directed to the receiver's eyes, ears, skin, and emotions.

Oral communication in this context may occur in a live face-to-face interaction between humans, or it may occur by means of a recorded voice.

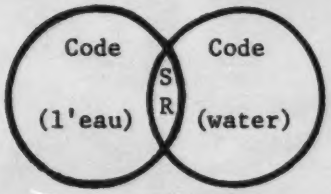
Sender (=S) Receiver (=R)



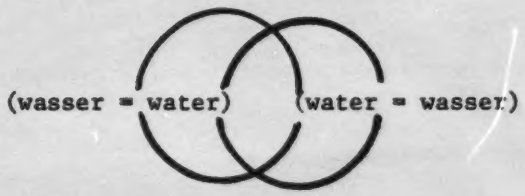
No communication possible
Separate language/ wave lengths



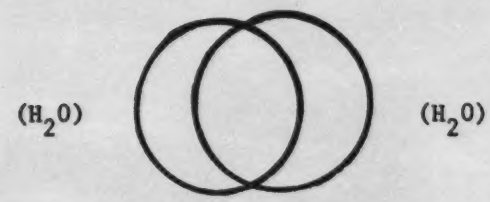
No communication yet, though becoming more possible



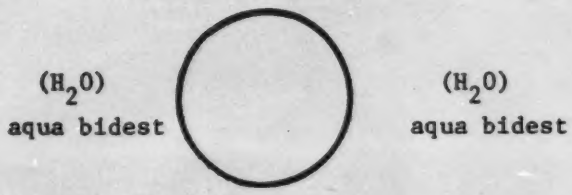
Some communication
Seeking common language



More communication
Common language



Nearly total communication
high shared information
low ambiguity



Clear communication
Thorough common understanding

2.4.1. (4)

Rhetoric is the art of efficient oral communication. Rhetoric makes use of the fact that humans have eyes, ears, and emotions. Rhetoric appeals to intellect and emotion.

Things are correct because they have been established, but they are more easily accepted if they are considered to be the judgment of an authority and if the speaker appears to be convinced of them. Make sure you are regarded as an authority where you have earned it.

The following scenario should be considered here:

After entering the room, take up eye contact, come to a stand-still.

Don't behave conspicuously; be dressed appropriately.

Breathe.

Mark the beginning, know the first lines by heart, show that you can tolerate being stared at. Give an introduction to the subject.

Say what you mean. Don't say anything if you don't mean anything. Don't say "Ah, Mmh," "OK," "All right," too often.

Do not apologize. The audience will realize that the speaker is human like themselves without "false humility."

Take your time; you decide the speed. Remember to breathe.

Stop to wake up sleeping people (or let them sleep).

Use visual aids but avoid talking to them instead of talking to the students.

Establish rapport (through humour or humanness).

Be aware of your physical appearance.

Stand relaxed on both feet. Do not embrace podium or lean on chalkboard.

Keep hands in a neutral position.

Use hands for positive, negative statements.

Hold tight to your paper.

Use your thumb or finger as a bookmark.

Keep eye contact automatically.

Use "mimic" muscular system.

Fit voice to topic .

Speak high-low (speak lower to emphasize certainty)
loud-soft (do not drop voice below audibility)
fast-slow (slow down to give a definition)

Show sureness of what you say.

Give examples - solicit examples.

Show excitement and enthusiasm.

Breathe.

Display calmness .

Are there any questions? Be tolerant, firm, humble, authoritative.

Observe the time limit.

Have an organized ending.

Know the last lines by heart. Sum up what has been said.

Make it clear that you have finished.

Statement: "Breathing is perfectly correlated with life, lack of breathing is perfectly correlated with death."

"Why do we still read to people who are capable of reading themselves?"

Since printing was invented several years ago and photo-copying more recently, instead of further listening to this lecture, you might:

1) Write down what you remember about lectures.
   (If you have taken notes, feel free to use them.)

2) Read the handout (lecture tip sheet) and relevant pages of McKeachie's book.

3) State which of the aforementioned suggestions you consider to be important to lecture efficiently.

4) Observe whether your colleagues consider the same suggestions important.

5) Prepare a lecture on "What a good lecturer should do to become an 'excellent' lecturer," using the suggestions and material given here.

6) Use this material in group discussion to defend the following statements:

   "Lecture is the only efficient way of teaching."

   "Lecture as a means of instruction is of little value and should not be used in teaching."

7) Deliver your defense to the group.

8) Present what you prepared in Unit 2.3.

References:

Gagné, R. The Conditions of Learning (3rd ed.). New York: Holt, Rinehart and Winston, 1977.

McKeachie, W.J. Teaching Tips (7th ed.). Toronto: D.C. Heath, 1978, Ch.4.

Evaluation of Unit 2.4.1. Lecture, Oral Delivery, and Rhetoric

Overall:

1) How would you judge the oral delivery and rhetorical competence? What was especially well done? Specify bad habits, if any.
2) Did the instructor refrain from lecturing on topics the students could have acquired better if they had read a book?
3) Did the instructor refrain from dwelling on the obvious?
4) Did the instructor use language which was neither too high nor too low for the students' capacity?
5) Could you identify different components of instruction?
6) Was instruction organized to benefit the learner?

Specifically, check for:

1) Enter "stage" (walk, eye contact, stand-still).
2) Standing position - no slouching, hugging, leaning.
3) Hands in neutral position.
4) Head.
5) Body - appropriately dynamic.
6) Eye contact.
7) Gestures natural, appropriate.
8) Mimic.
9) Breathing.
10) Visual aids.
11) Opening introduction.
12) Melody of voice.
13) Loudness of voice - appropriate variation.
14) Modulation of voice.
15) Distractors (ah, mmh).
16) Questions - rhetorical, clarifying, probing.
17) Breaks (intentional, unconscious).
18) Enunciation - diction.
19) Sureness of voice, rapport (human).
20) Emphasis on important subjects - factual vs. conceptual.
21) Speed - variation.
22) Time limit observed without rushing.
23) Calmness, self-confidence, pacing.
24) Is he/she convinced of what was said?
25) Concluding remarks (including summary).

Unit 2.4.2.

General Instructional Objective : Uses Audio-Visual Aids Effectively

Specific Learning Outcome: Demonstrates use of at least two media in short teaching episodes.

Visual Aids

Some technical hints:

Make sure that AV media do not turn into AV distractors!

A most important (yet often neglected) "audio-visual" aid is

your body and what's on it (dress)

your face and what comes out of your mouth (voice)

body can be static or dynamic (movement, gestures)

gestures should be dynamic enough to attract attention

body should be static enough not to distract attention

In short, voice and visual appearance should be variable within an acceptable range. Variation should occur for good reasons (i.e., to attract or keep attention, emphasize important points, etc.).

Chalkboard

Remember, you are not the only person who will have to read your most impressive handwriting.

Have coloured chalk, etc., ready before you start.

Talk to students directly, not to the chalkboard!

Take care not to erase board too soon. Leave the chalkboard clean when leaving the room.

Overhead Projector

Prepare the transparencies before class, using flap overlays if appropriate. Preparation is time consuming, but it will save time when giving the lecture again.

Know disclosure and masking techniques and use them appropriately.

Switch the projector off after the information on it has served its purpose.

If you use the projector the same way you use a chalkboard, consider using the chalkboard instead and reserving the projector for its best use. You wouldn't go shopping with a racing car, would you?

Now, prepare transparencies to act as visual aids for the lecture you gave before.

Slides

Make sure you know: how to darken the room (lights, blinds, shades)

how to operate the projector (on-off, forward-back, focus) and set up the screen.

Do you know where the spare bulb is and how to change it?

Have the slides in order (upsides down and backwards).

Check whether everything of importance can be seen from all seats.

You will never have to apologize for slides of bad quality if you do not show them in the first place.

It's your task now to go through your material and find out what can be turned into a slide and to eliminate pictures that do not contribute anything to learning.

Sound Movies and Videotapes

These are real audio-visual aids. It is distracting, however, if the sound is bad. If this is the case, turn off the sound and give the comments yourself, or turn off the film, if the picture is bad.

Best learning advantage can be attained when a film is properly introduced and when viewers have been asked questions beforehand and have time to discuss them afterwards.

Three Dimensional Exhibits

These may or may not serve better than two dimensional ones. Consider alternatives.

Take care they don't work as distractors while you are speaking to the students.

Videocamera, -tape, -monitor

May be useful if there is room for only one person in the demonstration area.

Tapes can be replayed or erased immediately afterwards.

Editing may be time-consuming and not up to the standard of a well made film.

Students might make their own "television program" as a learning exercise.

It is possible to use each of these tools effectively or poorly, to overuse or underuse them. Wisest use is when clearly justified by learning outcomes. Poorest use is as a time filler.

2.4.2. (3)

1) Work out examples for the use of three dimensional exhibits (static) and video camera (static and dynamic).

2) State when you would not use them and give reasons.

Optional Tasks:

3) Remember a university teacher you knew. Write down which (if any) visual aids he/she used and how he/she used them. State
   a) what you liked;
   b) what you disliked.

4) Present this to the group, using visual aids. Title the presentation, "How to Avoid Mistakes When Using AV Aids in a Lecture."

Reference:

Kemp, J.E. Planning and Producing Audio-Visual Materials (3rd ed.). New York: T.Y. Crowell, 1975.

Evaluation of Unit 2.4.2. Audio-Visual Techniques

1) Do you agree with the quantity and variety of visual aids?

2) Do you agree with the quality of visual aids (e.g., clarity, visibility, appropriateness to SLOs)?

3) Did the instructor time the visual aids appropriately within the lecture?

4) Was each visual aid displayed for an adequate amount of time?

5) How well were exhibits or actions demonstrated, i.e., could everybody look at the exhibits without distracting from or being distracted by the lecture?

Unit 2.4.3.

General Instructional Objective : Understands the Importance of Out-of-class Private Study to Learning

Specific Learning Outcome: Prepares assignments for reading and independent study.

Reading can include books, prepared texts, abstracts, or lecture notes of one's own or of colleagues. To tell students that they should read pages 1-100 might be a wrong approach. It might be more effective instead to give detailed assignments and to tell the students what the supposed outcome of their reading will be (advance organizers). The instruction could be as follows:

"After reading pages 1 - 100, you will be able to tell or relate to the class the following facts, or solve the following problems. Try to ask questions about each passage. Try to state a problem about each passage. Try to give a precis of a particular passage. Make an outline. Make a draft of an abstract. Report it to your classmates."

Through such assignments, the student gets information before reading so that it is clear why a certain text is to be read.

Now let us use the kind of information you were just given.

1) Please find the relevant chapters of McKeachie and read them so that afterwards you know and can discuss the pros and cons of the independent study method including reading, and compare it to the lecture method.

2) Work through the text in groups of two, asking each other questions about the contents of the passages. These questions are not meant to be control or evaluating questions. Working in small groups should be preparation for a discussion in a large group afterwards.

3) How would you set up assignments for students in a unit for your particular subject matter? You could give qualified assignments, that is, to state the learning outcomes or state a problem or raise questions on a particular passage.

4) Afterwards, the results of these three groups should be discussed in a large group.

2.4.3. (2)

Strengths and weaknesses of the methods:

Learner takes increased responsibility for scheduling study time and activities; student may prepare to ask better questions and "get more" out of class time; goes beyond the instructor's knowledge and resources. Student may use time poorly or be tempted to plagiarize the work of others.

Variations:

Term papers, literature reviews, and book reports can be prepared individually. Study groups can be organized, formally or informally; students can interview key individuals in the field or visit sites of important activity.

References:

McKeachie (1978), Chs. 8, 10.

Robinson, F. P. Effective Study (4th ed.). New York: Harper & Row, 1970.

2.4.3. (3)

Evaluation of Unit 2.4.3. Reading and Independent Study.

How well justified (in terms of SLOs and good use of study time) do the following seem to be:

1) Selection of reading matter,

2) Amount of assignments,

3 Advance organizers,

4) Questions raised,

5) Problems given,

6) The instructor's use of the reading assignments in the following period of "instruction," i.e., in the large group discussion.

Unit 2.4.4. Team Formation and Discussion Techniques

General Instructional Objective: Understands Nature of Different Group Techniques as Applicable to Teaching

Specific Learning Outcomes:

(1) Finds an acceptable solution to a problem in a limited amount of time in co-operation with others.
(2) Compares the quality of the outcomes of team-work with the outcomes of individual work.
(3) Performs techniques of systematically setting objectives, planning and accomplishing tasks given to a group.

A team under some circumstances may be more effective and productive in fulfilling tasks like finding a problem, searching for evidence, and judging results, than any individual member of it would be. Working as a team requires a variety of human abilities, especially interpersonal skills. Thus, if we choose working in teams of small groups, we have two learning outcomes in mind, predominantly in the affective domain.

(1) Student appreciates that some problems are better solved working in a team than working on one's own.

(2) Student cooperates efficiently with team members, i.e.,
Listens to others;
Respects the opinions of partners;
Doesn't push his own view;
Doesn't block others;
Is not insulted.

Working as a team may be appropriate for projects, for assigned tasks with an objective, or for an outcome or product for which every team member is striving.

Most of the work of a team will consist of discussion, but teamwork is different though closely related to discussion.

Seven people in one room are not a team, not even if they are told to be one. Thus a team cannot be expected to occur naturally, but must constitute itself, giving itself focus and organization. This organization includes an agreement on how to work on that team. Agreement should be reached by the team itself before it sets to work. The teacher can help the team focus its efforts, but the focus must be accepted by the team itself before it sets to work. Consequently, the members of the team should stay together for a certain period of time.

2.4.4. (2)

You will now demonstrate working in a team.

Work in groups of five to nine (optimally seven), solving the following tasks:

(1) State successful procedures of gaining cooperation that you have experienced when cooperating with others.

(2) Report how your group proceeded when solving problem (1) above.

(3) Try to find procedures deduced from (1) and (2) agreed upon by your team as its future way of working as a team.

(4) Afterwards, present your results to the other groups.

A sequence of tasks follows the one shown above, each sequence designed to promote group cohesion and purposeful focus, as well as effective relationships and communication within the group.

2.4.4. (3)

Discussion Techniques

Specific Learning Outcome: Induces strategy for holding discussions from experience.

A talk may seem to be a relaxed conversation not necessarily aiming at anything but casual communication. If a talk has an objective, however, it becomes a dialogue (involving two people) or a discussion (more than two). In a discussion, pros and cons and alternatives are considered, accepted, or turned down. Participants in a discussion may be ready to give up or alter their points of view without losing prestige if all are aiming at one objective.

If participants are reluctant to accept the views of others, however, or to show a certain amount of understanding, a debate could result. The aim of a debate is for each side to logically present its own point of view so that, in the end, one position is accepted either by all present (unlikely) or by the audience, who may have to vote on a winning position. Take a few minutes to talk about the above points. A discussion which can be focussed on a problem should result. The objectives of this discussion might be:

(1) to find agreement on how a discussion can be defined and distinguished from talk, dialogue, debate, and teamwork.

(2) discuss the following statement with the objective of either agreeing to it in total, altering it in some way, or rejecting it in total.

"Before using discussion as a means of instruction, make sure that students know how to act sucessfully in a discussion.
Acting successfully means that the student:
Expresses his thoughts in a way that is easily understood,
Listens to statements of others,
Repeats them in his own words,
Defends or resists ideas."

(3) discuss how you would make sure that discussion is used as a successful means of instruction in your course. Give an example of where, when, and how you would use it.

(4) discuss the role of the discussion leader.

(5) present the results of your group to the large group.

Variations on the discussion:

A variety of discussion formats exist, ranging from the single-purpose team through multiple problem focused groups, to the buzz group. Group size may vary greatly depending upon the task, time allowed and other factors.

2.4.4. (4)

Strengths and weaknesses of discussion methods:

Attitudes can be significantly influenced in a discussion as participants try out and get feedback on their ideas. Poor leadership can result in digression and wasted time.

References:

French, W. L., and Bell, C. H. Organizational Development. Englewood Cliffs: Prentice-Hall, 1973. (See p. 112 on team building.)

Maier, N. R. F. Problem Solving Discussions and Conferences. New York: McGraw-Hill, 1963.

McKeachie (1978), Ch. 5.

2.4.4. (5)

Evaluation of Unit 2.4.4. Team Formation and Discussion Techniques

1) Were the outcomes of the teamwork and discussion satisfactory?

2) Was the subject matter apt for discussion?

3) Could all the problems be dealt with?

Did the participants improve in

4) solving problems better?

5) cooperating more efficiently?

6) respecting their partners' points of view?

7) not pushing?

8) not blocking?

9) not being insulted?

10) working towards the objective the team had agreed upon?

11) working to the schedule the team had agreed upon?

12) Did the groups avoid successfully the problem of dwelling on too many small problems?

13) Did they avoid "talking" instead of "discussion"?

14) Did they avoid "debating"?

15) Did the members improve their verbalizing abilities?

16) Did the members improve their visualizing abilities?

Unit 2.4.5. Seminar Teaching

General Instructional Objective : Analyses Seminar Teaching for Impact on Participants

Specific Learning Outcome: Prepares a seminar presentation to classmates on a topic of choice.

If a participant has prepared for the programmed instruction assignment (2.4.6.), he should be able to contribute from his reading and experience to solve the following problems:

1) How could programmed instruction be used as an adjunct to teaching?
2) Discuss and state the amount of agreement in your group on A and B below in terms of the accuracy of the method-objective match and where PI fits in the scheme.

A. The following methods can be considered most appropriate for the general objectives and broad behavioral domain listed.

Methods	Objectives	Domain
Lecture	know, understand; accept (on authority)	cognitive affective
Practicum, Clinical Teaching	apply, analyse, synthesize; respond, value, organize; apply skills	cognitive affective psychomotor
Seminar -discussion	understand, analyse, synthesize; respond, accept, value, organize	cognitive affective
Team Formation and Discussion	understand, analyse, synthesize, evaluate; accept, respond, value	cognitive affective

B. A Seminar can be used as a means of instruction, combining aspects of both lecture and discussion methods in a small group situation

(a) if the participants are experienced in their fields;
(b) if the seminar leader is prepared;
(c) if it is not used for giving information but for deepening and widening the understanding and experience of the participants;
(d) if the participants are well prepared for the session. (In a discussion, it is useful to be prepared. In a seminar, it causes serious problems if participants are not prepared.)

Variations on the seminar:

Two or more leaders (a modified debate); thematic series of seminars about an interrelated sequence of topics; guest "colloquium" speakers.

2.4.5. (2)

Strengths and weaknesses of the method:

Each student has a turn at leading a seminar on a special topic;
pre-reading assignments are usually necessary for effective seminars;
participants have an opportunity to question an expert;
the presentation may be poor or result in merely reading a paper aloud;
time for questions and discussion is sometimes cut short.

Evaluation of Unit 2.4.5. Seminar Teaching

1) Was the seminar presenter well-prepared?

2) Did the participants have an opportunity to acquire adequate background information?

3) Were the participants, in fact, well-prepared?

4) To what extent did the participants accomplish the desired learning outcomes as a result of the seminar?

5) Was time permitted for questioning in depth?

6) Was the seminar an appropriate format for the learning outcomes involved?

Unit 2.4.6.

General Instructional Objectives: Analyses Programmed Instruction or Computer Assisted Instruction as Adjuncts to Teaching

Specific Learning Outcomes: States principles of programmed instruction (PI); defends position on use (or not) of programmed instruction.

Programmed Instruction

For programmed instruction and computer-assisted instruction, read the relevant chapter in McKeachie to know the basic principles.

1) Be prepared to relate them to the large group. Combine them with your experience to make judgements about effectiveness (see task in 2.4.5. above).

2) State whether and to what extent programmed instruction can be used in your subject, and give reasons for your statement.

Variations:

Programmed instruction exists in a variety of formats, among them linear and branched sequences, bound as a book, or presented by machine. Determine what has been published in your field and what learning outcomes the programs are written to achieve.

Summary of strengths and weaknesses:

Programmed instruction allows students to progress at their own rate and provides immediate (and corrective) feedback to required responses. Bright students may be "put off" by long linear programs, and it is easy to emphasize "low level" objectives.

References:

Calvin, A. D. (Ed.). Programmed Instruction - Bold New Venture. Bloomington: Indiana University Press, 1969.

Hicks, B., and Hunka, S. The Teacher and the Computer. Philadelphia: Saunders, 1972.

McKeachie (1978), Ch. 10.

Evaluation of Unit 2.4.6.

Some questions to consider about programmed instruction:

1) How well does the instructional program meet the objectives of the course?

2) Does the author/publisher of the program provide data about the time, success rate, and achievement results of the program?

3) How does the cost of the materials compare with alternative materials (textbooks, workbooks, etc.)?

4) Have you tried the program yourself? Does it have errors or serious omissions?

5) Can you obtain some sample student reactions to it?

Unit 2.4.7.

General Instruction Objective: Prepares Field Work or Practicum Experiences Appropriate to Desired Learning Outcomes of Students

Specific Learning Outcome: Designs a unit of field work for one's (future) students.

The purpose of field work is to provide, in an applied setting, guided practice using what has been or is to be learned.

A practicum serves to support and to transfer into action what the students know. If something has been learned as verbal material, practice may serve to activate and coordinate cognitive, affective, and psychomotor aspects. It also serves to smooth and make routine (or habitual) a new sequence of action.

The teacher's role is not only to correct errors but to observe and identify items that can be incorporated into teaching next time. Only major mistakes or repeated mistakes should be corrected. If one corrects every single error, the student might not be able to use such a large volume of negative information. Making mistakes is not the major problem of learning. But not recognizing them can be dangerous, not only to the learner but to those he will have to work with. Thus practice does not necessarily make a perfect performance in the sense of 100% perfection. It can, however, be a valuable means of self-evaluation and improvement.

Variations:

Field work and practica can be offered for credit or non-credit; they may vary in length, location, and degree of supervision.

Strengths and weaknesses:

These methods provide firsthand knowledge and may stimulate interest in the topic. Field supervision and evaluation are sometimes difficult; the methods may be expensive and time consuming for the results obtained.

Unit 2.4.8. Simulation and Role Playing Exercises

General Instructional Objective: Understands Simulation in Teaching

Specific Learning Outcome: Designs role playing exercises for topics one might teach.

Preparation:

1. State objectives for acquiring or using other viewpoints or new activities.

2. Design a scenario wherein alternative viewpoints may be taken or alternative activities undertaken.

3. Create roles giving enough guidance, including pre-reading, to provide a problem focus, but not so much as to limit the participants' abilities to develop their own ideas.

Procedures:

1. Assign, or have participants select, roles.

2. Organize, time, and observe activities.

3. Stimulate action or remind participants of focus. ("What about...?" if they stray off the subject.)

4. Summarize results or allow participants to do so. Consider reversing roles and replaying.

Variations:

A debate; a panel (participants are experts or role-playing experts); learning games.

Strengths and weaknesses of the method:

Active learning changes behavior, and discussion aspect may influence attitudes. The "fun" aspects may override cognitive outcomes.

References:

Armstrong, R. H. R. Instructional Simulation Systems in Higher Education. Cambridge, England: Cambridge Monographs on Teaching Methods, Cambridge Institute of Education, England, 1970.

Boocock, S. S. Simulation Games in Learning. Beverly Hills, California: Sage Publications, Inc., 1968.

McKeachie (1978), Chs. 13, 15.

Evaluation of Unit 2.4.8. Simulation and Role Playing

Some questions to consider:

1) Were the intended specific outcomes of the role playing attained?

2) Was the time usefully spent in achieving worthwhile objectives?

3) Did participants express satisfaction with the experience?

4) How could it be improved (replaced with an alternate activity) to better meet the requirements in questions 1), 2), and 3) above?

Unit 2.4.9. Other Teaching Methods

General Instructional Objectives: Knows Other Teaching Methods, Considers Their Possible Uses, Evaluates Them With One's Own Experience

Specific Learning Outcome: Selects two procedures for development as teaching techniques.

A variety of alternatives to and variations on traditional lecturing have been developed and reported over the years. They are listed below in alphabetical order, and you might find out about (and even try) them:

Clinical Teaching

Conference

ETSI (Education Through Student Interaction)

Feldhusen's Three Stage Plan

Keller Plan (also known as PSI - Personalized System of Instruction)

Laboratory Teaching

Learning Cell

Lecture Committee

Peer Tutoring

Project Methods

Pyramid Plan

Team Teaching

Term Papers

Tutorials

Visiting Experts

Workshops

Can you think of others?

What strengths and weaknesses can you find for alternative methods? Which ones might be appropriate to your objectives/conditions?

Since the applicability of these teaching methods depends largely on the individual situation, they are not dealt with in this course but in special workshop-seminars.

As you have worked out the principles of facilitating learning (i.e., teaching), you will be in a position to acquire, alter, develop, and invent new methods from your experience, from the experience of others, from literature, and from courses in educational science. These methods will no longer be the methods of the instructor of this course, but your methods, fitting your personality and the personalities of your students. Such methods will be for the benefit of your students and consequently for your benefit.

References:

Goldschmid, M. L. The Learning Cell. Learning and Development, 1971, 2, (5). Montreal: McGill University.

Improving College and University Teaching (a quarterly journal; cf. also the yearbook series, 1975, 1976 published at Corvallis, Oregon, U.S.A.)

Kitchener, K. G. and Hurst, J. D. Education Through Student Interaction. Fort Collins, Colorado: Rocky Mountains Behavioral Science Institute, 1972.

McKeachie (1978), Chs. 7, 11, 14, 15.

Evaluation of Unit 2.4.9.

Some questions to consider:

1) Does a specific alternative method make good use of available time and resources?

2) Is there someone available to you who has tried the method and can advise you on it?

3) Is it likely that your students will cooperate?

4) Were serious efforts made to evaluate possible use of some of the alternate methods?

Unit 2.5.

General Instructional Objective: Develops Evaluation Procedures

Specific Learning Outcome: Writes test items suitable to assessing attainment of SLOs written earlier.

At the beginning of this course, the purpose of teaching was characterized as being at least in part to help students know and do things which the teacher knows how to do, which the students want to do, which the teacher thinks they should want to do, and which the teacher thinks he should cause them to want to do. At the outset for any course, part of this help includes establishing the evaluation (including marking) system and communicating it to the students.

Since wanting to learn (motivation) is a major prerequisite of learning, a teacher would meet students' needs (wanting to learn) if he taught them what they wanted to learn. A teacher would hardly meet students' needs if he tried to teach them what they did not want to learn. Teachers often do not know what students want, and students are not completely clear on what they want or need. Therefore it is sometimes necessary to assess (usually informally) what students expect from a course and to try to influence their expectations accordingly.

The direct way of finding out is to ask students what they want to learn. They may say, "How to play soccer." Some students will say, "How to earn big money," or, "How to gain personal power and influence." Other students, however, may know in general what their needs are, but may still have to be given specific direction. One way of learning whether the students' needs can be met is to ask students for their expectations, then tell them what can be offered. If these do not match, suggest that the student go to a different course, or you might be able to modify the course (and thus the learning outcomes) for these expressed student needs and at the same time stay within the overall intended purpose of the course.

Evaluation continues informally by asking yourself whether you taught the students what they wanted to learn, and whether they did learn what they had wanted to learn. Then it proceeds formally with an actual assessment of student learning and some sort of evaluation of the course.

Types of evaluation differ depending upon whether or not the course is being taken for credit, whether the students are young or mature, and the level of the course. In a non-credit course, you might just ask them what they learned and how satisfied they are with what they learned. They in turn might ask you how much you think they learned and where they might "go" from here.

In a credit course, however, it is a teacher's responsibility to report that students have earned the credit, usually represented in the form of a mark. Thus evaluation must be based upon some standards and above all, it must be just. Since students are very much concerned about a "just" judgment, the teacher should be able to explain why each received a particular grade. It is not sufficient to say that

a student failed because he forgot something. A teacher must be able to tell him that he failed because the things he omitted were crucial to an adequate and accurate understanding of the subject.

Evaluation can be thought of as a judgment based upon measurement. Two types of measurement in education can be identified. Both are based upon assignment of a value to samples of performance. In "norm referenced" measurement, the comparison of a student's performance is to others in his group (e.g. class standings). In "criterion referenced" measurement, the performance is compared to a predetermined standard. When we evaluate, we should always ask the questions, "How good was the candidate's performance? Do I agree with what he did in relation to how I would have done? The responses could be, "Excellent," "Good," "Satisfactory," "Rather poor," "Poor," or they could be, "Definitely yes," "I think so," "Maybe," "I don't think so," "Definitely no," or you could assign marks accordingly.

Another thing to be considered at this point is the comparative importance of the different learning outcomes. Some learning outcomes are very important, others less important. Thus a mediocre performance in a very important learning outcome may count as much or more than an outstanding performance in a more trivial learning outcome. One can balance learning outcomes by constructing a "Table of Specifications" and assuring that the test items (or points) are balanced across learning outcomes to reflect differences in importance.

Reading:

Gronlund, N. E. Constructing Achievement Tests (2nd ed.). Englewood Cliffs, N.J.: Prentice-Hall, 1977.

McKeachie (1978), Ch. 16

2.5. (3)

Evaluation of Unit 2.5. Evaluation Procedures

Before each unit of this course, the participants were told the learning outcomes. At the end of each unit, their work was evaluated. Information was also given about how the instructor and the course would be evaluated.

The "evaluation of the evaluation" can be done informally by answering the following questions:

1) Did the evaluation match the learning outcomes stated at the beginning?

Was the schedule of evaluation

2) comprehensive?

3) relevant?

4) understandable?

5) handy?

6) significant?

7) Could you use the results of your own and other participants' evaluations for your benefit?

3.0. (1)

Unit 3.0. Teaches

General Instructional Objective: Each Participant Teaches One or More Units He/She Has Prepared

As time permits, teach the units you have prepared in a variety of in-class situations (see 3.1.) or in your own class. Use methods and materials you believe to be appropriate.

Ask participants to evaluate teaching through feedback questionnaires and advice. What was effective and why? What could be done better next time and how?

Tape record some teaching sessions (audio or video). Play back the recordings. Listen or look for certain things (voice, eye contact, explicit use of objectives, types of examples, distracting mannerisms, gestures, number and level of questions, quality of student participation, etc.).

Unit 3.1 Teaches in a simulation with the participants of this course as students

Unit 3.2 Teaches in a course of one's choice

3.0. (2)

Evaluation of Units 3.1., 3.2. Schedule of Teaching and Evaluation

1) How good was the teaching overall?

2) Was the material selected appropriate for this instruction?

3) Was too much importance attached to the teacher's special interests in the subject matter?

4) Was the emphasis across points appropriate to the needs/interests of students?

5) Do you agree with the time schedule?

6) Do you agree with the quantity of material?

7) Do you agree with the methods used in organizing the material? Would you have organized the same material using the same methods the teacher used?

8) Was proper attention given to lecture and visual aids, demonstrations, independent study such as reading, teamwork, discussion, practicing, and seminar?

9) Was the teaching method appropriate to the topic and the students?

10) Were instructions clear and was communication intelligible?

11) Was the schedule of evaluation well set up?

12) Were there Pretests? Posttests? Feedback?

Unit 4.0.

General Instructional Objective: Measures and Evaluates Learning and Teaching

Specific Learning Outcomes: Completes 4.1., 4.2., 4.3., 4.4., 4.5. below.

4.1. Review the general principles of educational measurement and evaluation. Measurement is a determination of how much of some quantity exists. Evaluation is a judgment about how good or bad it is. Understand the following principles and issues:

- 4.1.1. Test reliability as consistency of measurement.
- 4.1.2. Test validity as accuracy of measurement.
- 4.1.3. Norm-referenced measurement involves comparisons among scores (e.g., ranking results).
- 4.1.4. Criterion-referenced measurement involves comparisons of scores with a predetermined standard.
- 4.1.5. Measuring an outcome involves taking a representative sample of performance.

4.2. Measure and evaluate student achievement (may be formative, for decision making; or summative, for the record). Administer examinations, evaluate projects, etc. Consider the following:

- 4.2.1. Selection items - true or false, multiple choice, matching.
- 4.2.2. Supply items - short answer, extended answer, essays, oral examinations.
- 4.2.3. Term papers, projects, presentations.

4.3. Review marking systems and summative evaluation. Discuss the following:

- 4.3.1. Implications of criterion-referenced and norm-referenced measurement.
- 4.3.2. Contract system of grading.

4.4. Prepare and use course evaluation - consider sources and uses of data. (See page 4.4.(1).)

- 4.4.1. Student evaluation of teaching.
- 4.4.2. Peer evaluation.
- 4.4.3. Self evaluation.
- 4.4.4. Evaluation for improvement (formative).
- 4.4.5. Evaluation for personnel decisions (summative).

4.5. Revise 1-4 for further simulation or actual course.

Reading: Gronlund, N. E. Constructing Achievement Tests (2nd ed.). Englewood Cliffs, N.J.: Prentice-Hall, 1977.

Gronlund, N. E. Preparing Criterion Referenced Tests for Classroom Instruction. Toronto: MacMillan, 1973.

McKeachie (1978), Chs. 16, 17.

4.4. Course Evaluation

General Instructional Objective: Understands Uses of Course Evaluation in Teaching Improvement

Specific Learning Outcome: Selects appropriate course evaluation methods.

A number of systems exist for course evaluation drawing upon data supplied through student questionnaires, peer reports, and self-evaluation. In the United States, the S.I.R., C.E.Q., I.D.E.A., S.P.O.T. and T.A.B.S.* systems are well established. In Canada, the McGill Faculty and Course Evaluation System and a new system being developed at U.B.C. which is based in part upon some of the characteristics of the aforementioned models and Purdue University's "Cafeteria" System provide instructors with means of getting systematic feedback for course improvement.

Scale categories, numbers of items per category, and sample items drawn from S.I.R. are noted below.

Course Organization and Content (24 items)

1) The instructor's objectives for the course were made clear at the outset.
2) Students had an adequate say in how the course was run, e.g., topics covered, amount of discussion, etc.

Instructor-Student Relations (12 items)

1) There was a relaxed atmosphere in the class--generally students were comfortable and at ease.
2) The instructor seemed to enjoy teaching the class.

Communication (7 items)

1) The instructor spoke audibly and clearly.
2) The instructor exhibited distracting mannerisms.

Assignments and Evaluation (23 items)

1) The instructor informed students of the basis for evaluation.
2) The instructor periodically let students know how they were doing.

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*Student Instructional Report (S.I.R.), Educational Testing Service, Princeton, New Jersey; Course Evaluation Questionnaire (C.E.Q.), University of Illinois, Champaign, Illinois; The Instructional Development and Effectiveness Assessment System (I.D.E.A.), Kansas State University, Manhattan, Kansas; Student Perspective on Teaching (S.P.O.T.), University of Iowa, Iowa City, Iowa; Teaching Analysis by Students (T.A.B.S.), University of Massachusetts, Amherst, Massachusetts.

Lectures (9 items)

1) The instructor lectured in a way that made note taking easy.

2) The level of difficulty of lectures was often too advanced.

Discussions-Seminars (14 items)

1) Most of the students were involved in the discussions.

2) The instructor usually summarized the discussion at the end of the class session.

Laboratories (8 items)

1) There was ample opportunity to ask questions and get help in the labs.

2) There was opportunity to do creative and imaginative work in the labs.

Student's Involvement, Background Information

1) Compared to other courses of equal credit, I have put more effort in this course.

2) My interest in the general subject areas has been stimulated by this course.

Comments Section

Comments on Instructor Student Relations:

Comments on Communications:

These items may be responded to on a four or five point scale ranging from Strongly Agree to Strongly Disagree.

References:

See footnote on page 4.4.(1).

McKeachie (1978), Ch. 26.

4.4. (3)

Evaluation of Unit 4.0.

1) How appropriate were the procedures used to the problems faced?

2) Did the measures discriminate in terms of quality of the outcomes?

3) Did evaluation procedures contribute to course improvement?

5.0. (1)

Unit 5.0. Revision

General Instructional Objective: Understands Importance of Improving Teaching Through Course Revision Activities

Course revision may occur at any (combination of) stage(s) of instruction. General objectives can be revised to reflect imbalances in emphasis across the levels in cognitive, affective, and psychomotor behavioral domains. Specific outcomes may be revised to update a course to the latest knowledge in a field or to obtain a better sample of student learning. Differences in entering behavior of students prompts revision of objectives and possibly also of planning for methods and materials.

Planning for instruction can be updated through consideration of alternate methods and materials. Any revisions to objectives or planning have corresponding implications for actual teaching.

If objectives change, evaluation should change accordingly. Even if objectives remain the same, it may be possible to improve the reliability and validity of measures of student achievement, through uses of item analysis and tables of specifications, for example.

Possibilities and needs for further revision abound, and one should not be lulled into a "false sense of security" over having followed the procedures carefully. Typically, informal assessment, the mere passage of time, or some variation in the evaluation results of either learning or teaching will indicate that further revision is necessary.

References:

Gronlund (1978), Appendix A.

McKeachie (1978), Appendix C.

POSTSCRIPT

This annotated outline was intended to guide those who might undertake to offer or participate in an intensive course in teaching improvement at the college or university levels. It was not designed to be a comprehensive treatise on the subject, although the assignments, annotations, and references give guidance for individuals who might do work on their own or in informal groups.

In developing this outline, we drew upon experiences in offering teaching development and improvement courses and workshops in Canada and Germany, and on the experiences reported by our colleagues in many parts of the world. Our aim was to be practical, to minimize jargon and needless abstraction, while at the same time, avoiding platitudes and groundless opinion.

References were kept to a small number that related directly to the issue of concern. A more extensive reading list will appear in the next report in this series.

Comments, questions, reactions, and advice on this outline are welcomed by the authors at any time.